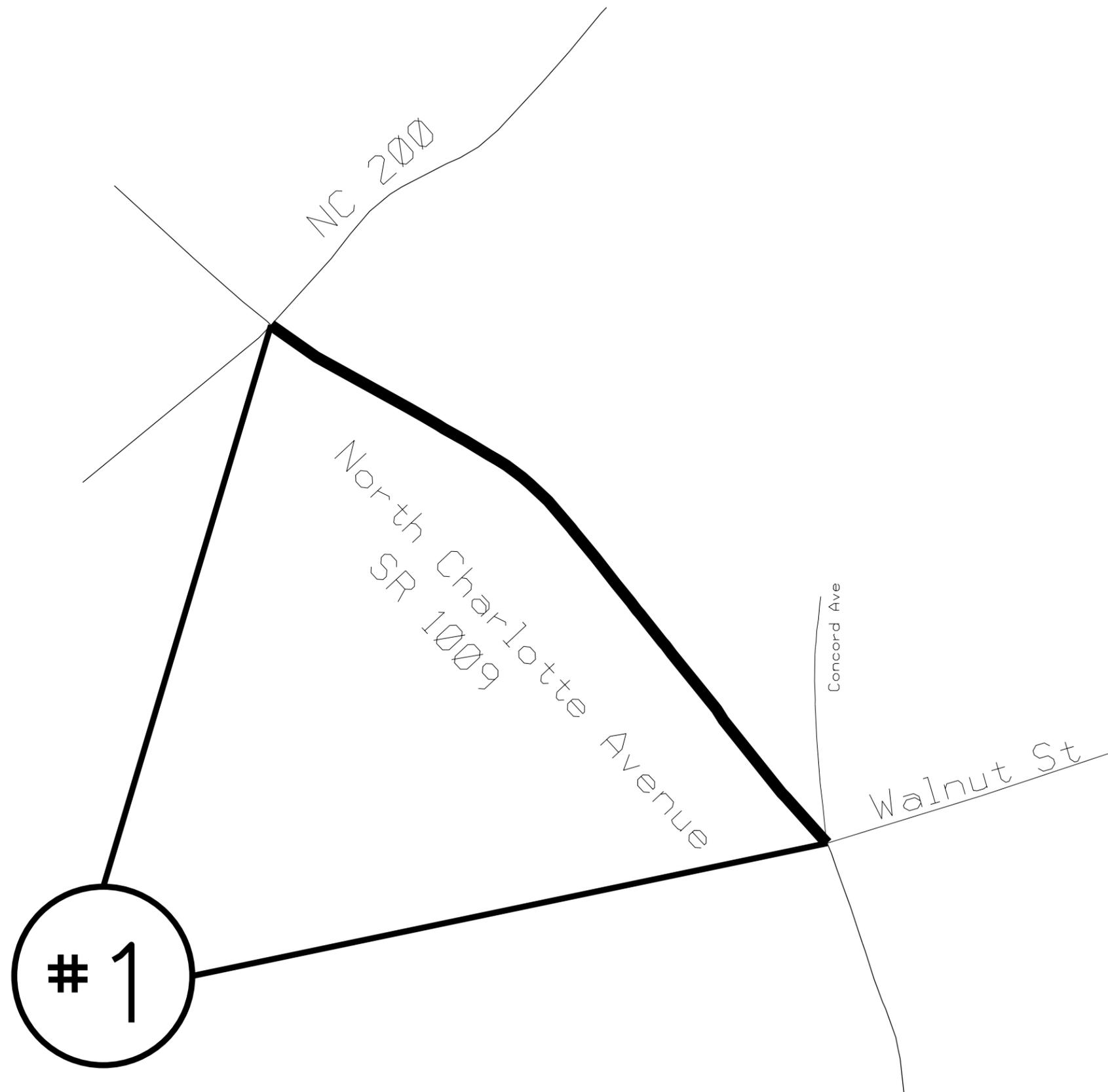


STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	49860.3.5	1	
F.A. PROJECT NO.		1003186	

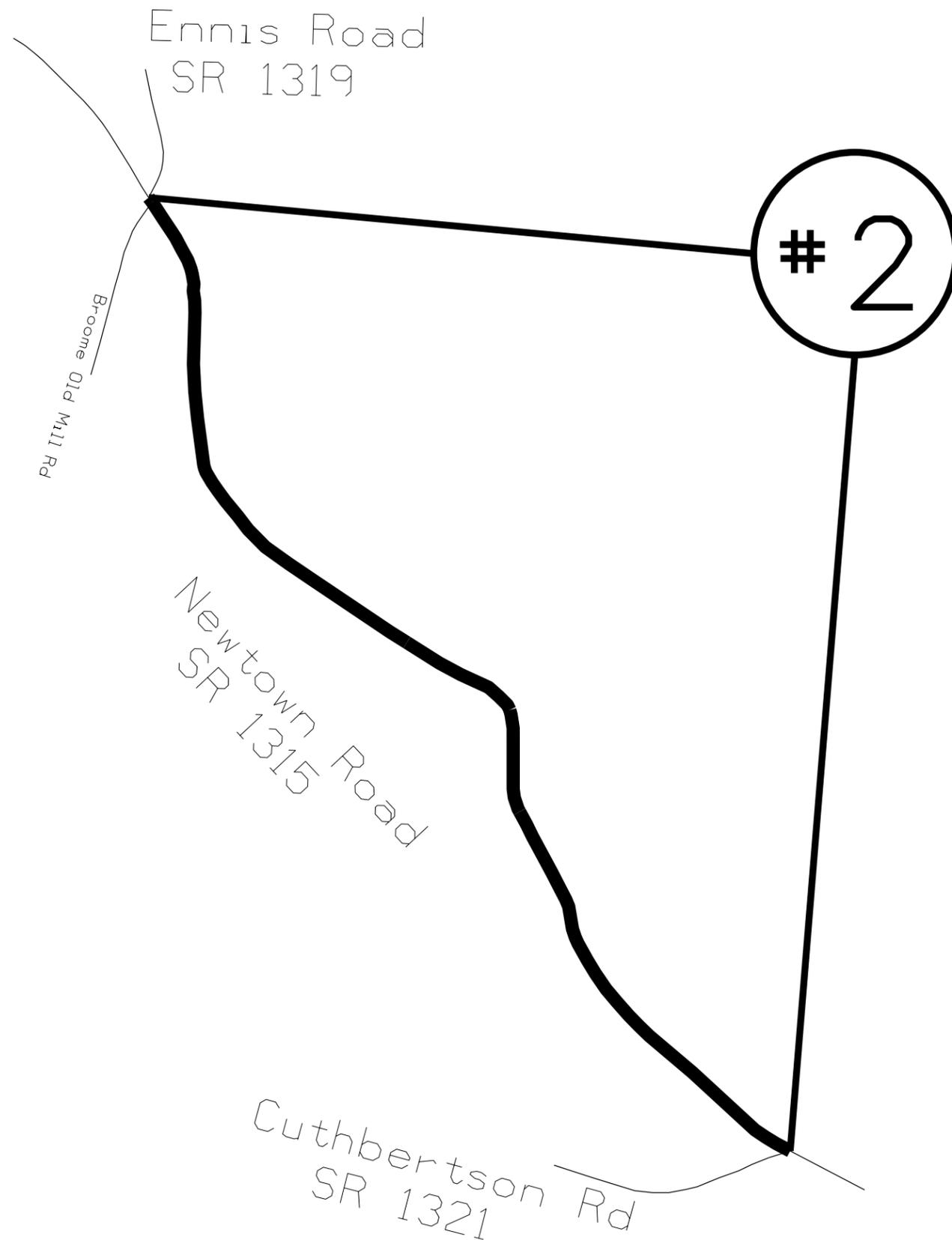


ENLARGED MUNICIPAL AND SUBURBAN AREAS
 UNION COUNTY
 NORTH CAROLINA
PREPARED BY THE
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS - DIVISION 10 DISTRICT 3

MAP #1 SR 1009 NORTH CHARLOTTE AVENUE
 1.12 MILES
 FROM WALNUT STREET
 TO NC 200



STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	49860.3.5	2	
F.A. PROJECT NO.		1003186	

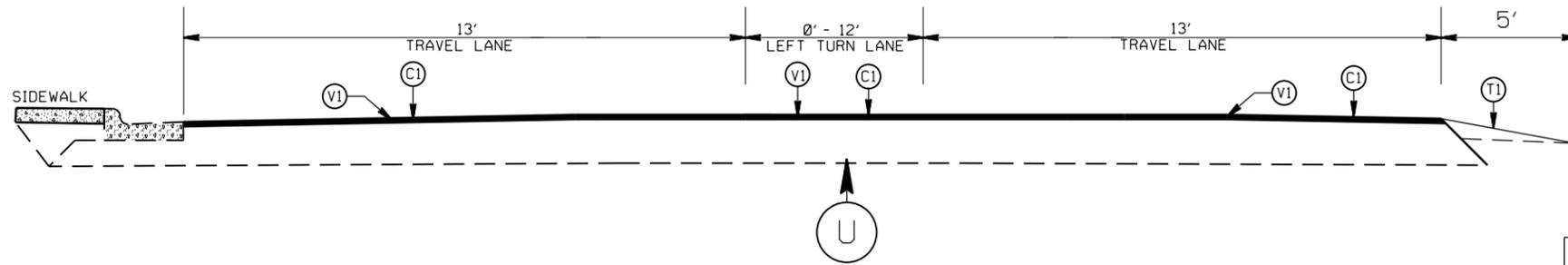


ENLARGED MUNICIPAL AND SUBURBAN AREAS
UNION COUNTY
NORTH CAROLINA

PREPARED BY: EHE
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - DIVISION 10 DISTRICT 3

MAP # 2 SR 1315 NEWTOWN ROAD
2.1 MILES
FROM SR 1321 CUTHBERTSON ROAD
TO SR 1319 ENNIS ROAD

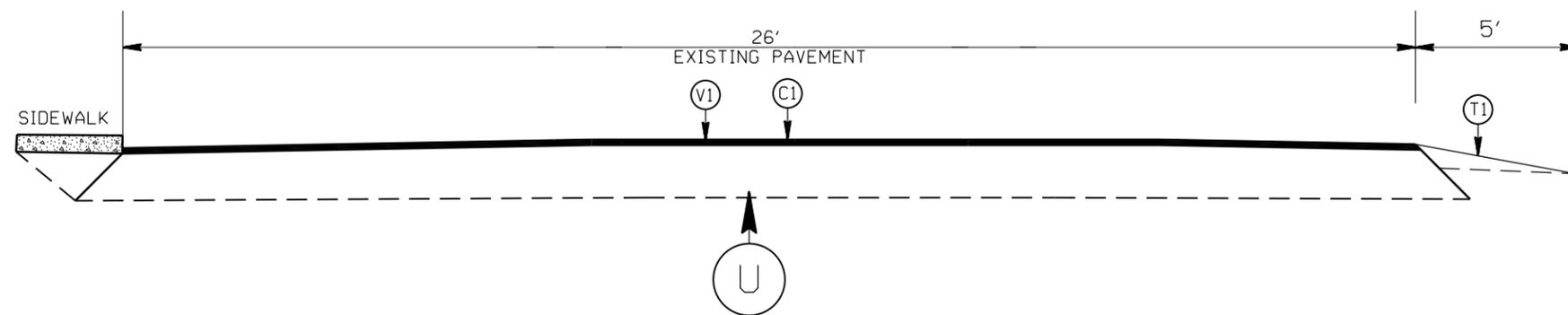
STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	49860.3.5	3	
F.A. PROJECT NO.		1003186	



TYPICAL SECTION 1
 SR 1009 NORTH CHARLOTTE AVENUE (MAP 1)
 APPROX. STA: 10+00 TO 13+50

PAVEMENT SCHEDULE

(C1)	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
(T1)	SHOULDER RECONSTRUCTION
(U)	EXISTING PAVEMENT
(V1)	MILLING OF EXISTING PAVEMENT, 1.5" DEPTH.

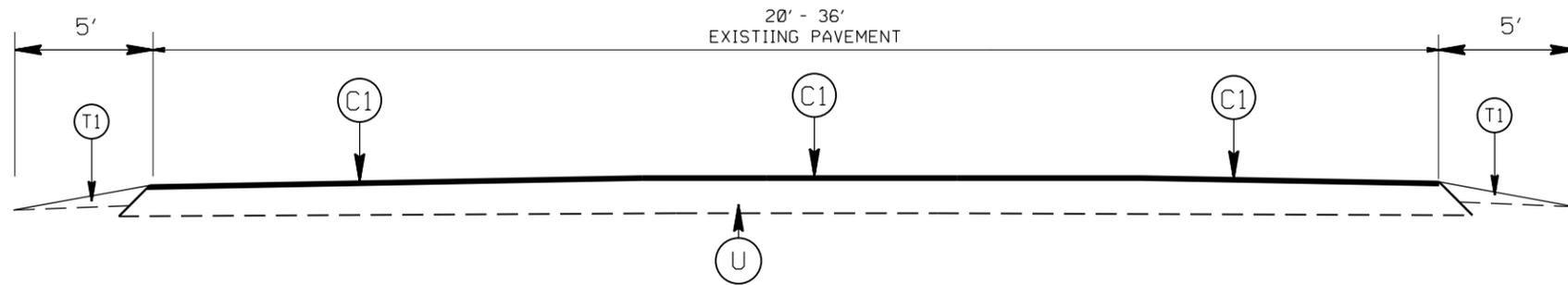


TYPICAL SECTION 2
 SR 1009 NORTH CHARLOTTE AVENUE (MAP 1)
 APPROX. STA: 13+50 TO 32+60

UNION COUNTY RESURFACING

SCALE	-NA-		REVISIONS
DATE	9/21		
DWG. BY	AMO		
DESIGN BY	AMO		
APPROVED			

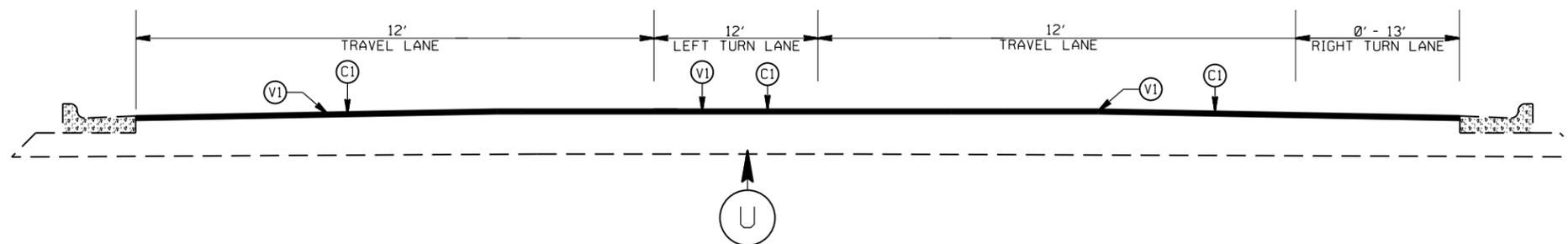
STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	49860.3.5	4	
F.A. PROJECT NO.		1003186	



TYPICAL SECTION 3
 SR 1009 NORTH CHARLOTTE AVENUE (MAP 1)
 APPROX. STA: 32+60 TO 65+80
 SR 1315 NEWTOWN ROAD (MAP 2)

PAVEMENT SCHEDULE

(C1)	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
(T1)	SHOULDER RECONSTRUCTION
(U)	EXISTING PAVEMENT
(V1)	MILLING OF EXISTING PAVEMENT, 1.5" DEPTH.



TYPICAL SECTION 4
 SR 1009 NORTH CHARLOTTE AVENUE (MAP 1)
 APPROX. STA: 65+80 TO 68+35

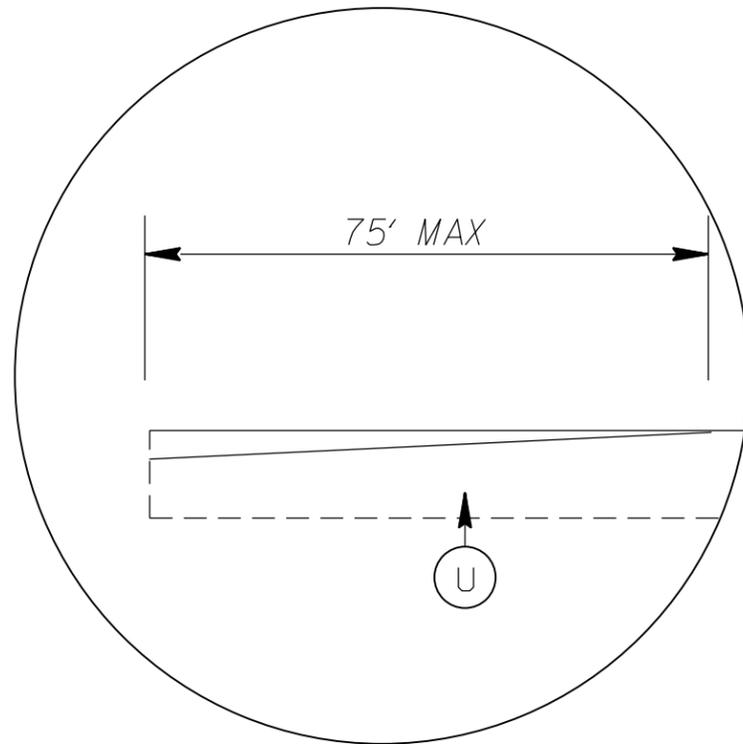
UNION COUNTY RESURFACING

SCALE	-NA-
DATE	9/21
DWG. BY	AMO
DESIGN BY	AMO
APPROVED	



REVISIONS	

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	49860.3.5	5	
F.A. PROJECT NO.		1003186	

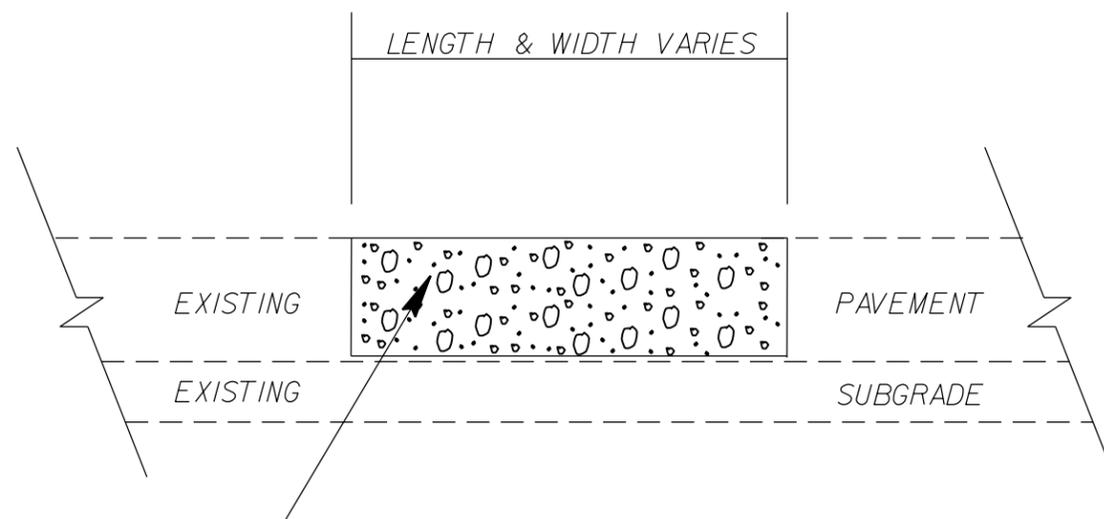


DETAIL FOR INCIDENTAL MILLING (0" TO 1.5")
TIE IN

PAVEMENT SCHEDULE

(C1)	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
(T1)	SHOULDER RECONSTRUCTION
(U)	EXISTING PAVEMENT
(V1)	MILLING OF EXISTING PAVEMENT, 1.5" DEPTH.

PATCHING DETAIL



RATE IS VARIABLE AND SHALL BE AS DIRECTED BY THE ENGINEER. ASPHALT TYPE 119.0C SHALL BE PLACED.

UNION COUNTY RESURFACING

SCALE	-NA-
DATE	7/21
DWG. BY	AMO
DESIGN BY	AMO
APPROVED	



REVISIONS	

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	49860.3.5	6	
F.A. PROJECT NO.		1003186	

NOTES:

1: ON MAP 2, MILL AND INLAY BRIDGES WITH 1.5" S9,5C.

2: SHOULDER RECONSTRUCTION WILL BE AS DIRECTED BY THE ENGINEER.

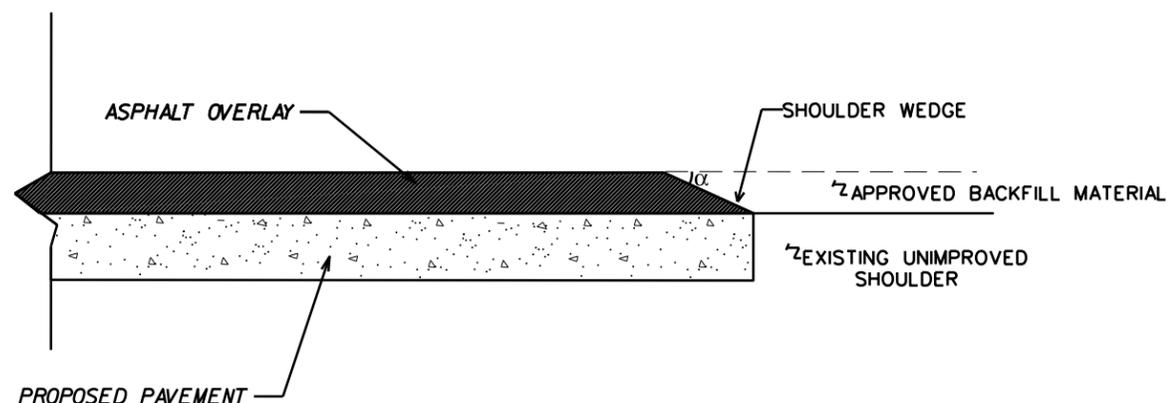
UNION COUNTY RESURFACING

SCALE	-NA-		REVISIONS	
DATE	7/21			
DWG. BY	AMO			
DESIGN BY	AMO			
APPROVED				

NOTES:

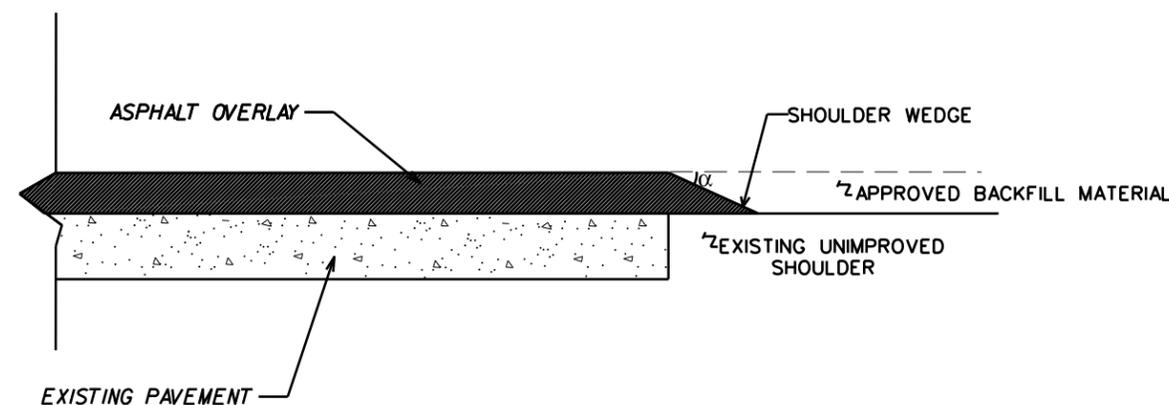
- 1) DETAIL DOES NOT APPLY TO OGAFC AND ULTRA-THIN BONDED WEARING COURSE.
- 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
- 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS AND SIDE STREETS.

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	49860.3.5	7	
F.A. PROJECT NO.		1003186	



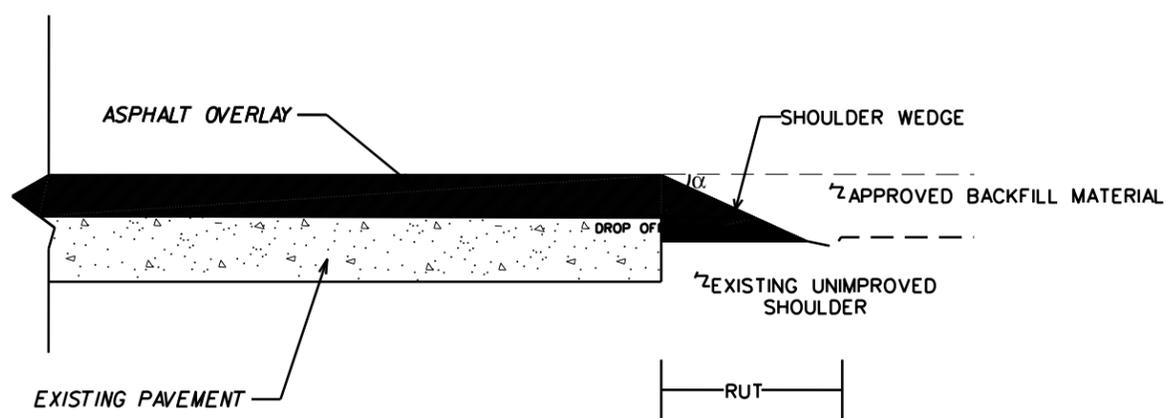
SHOULDER WEDGE DETAIL

(RESURFACING PROJECTS W/ WIDENING OR WITH EXISTING PAVED SHOILDER HAVING NO DROPOFFS)



SHOULDER WEDGE DETAIL

(RESURFACING PROJECTS W/ NO WIDENING)



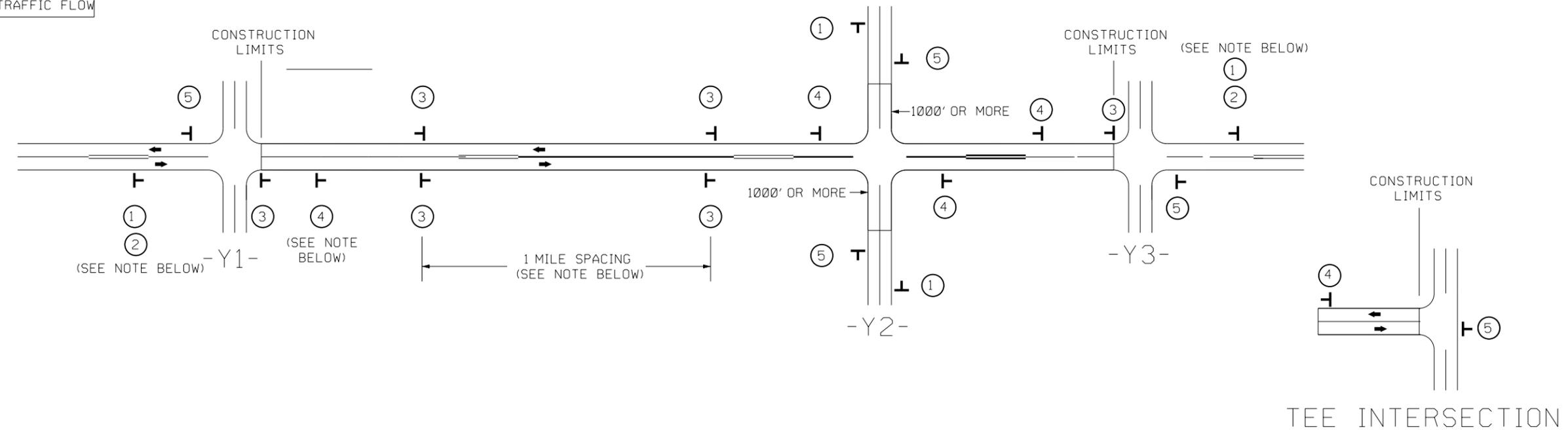
SHOULDER WEDGE DETAIL
(RESURFACING ADJACENT TO RUTTED SHOULDER)

$\alpha = 30$ DEGREES

SHOULDER WEDGE DETAILS			
SCALE	-NA-		REVISIONS
DATE	11/20		
DWG. BY	AMO		
DESIGN BY	AMO		
APPROVED			

SIGNING FOR RESURFACING PROJECTS

LEGEND
 STATIONARY SIGN
 DIRECTION OF TRAFFIC FLOW



MAINLINE (-L-) SIGNING

-Y- LINE SIGNING

SIGNING NOTES AND PLACEMENT PER DIRECTION	<p>①  PLACE 1000' PRIOR TO BEGINNING OF CONSTRUCTION LIMITS. ONLY USED ON -Y- LINES IF RESURFACING LIMITS EXTEND 1000' ALONG -Y- LINE.</p> <p>②  #2 SIGN ONLY USED WHEN CONSTRUCTION LIMITS ARE 2 OR MORE MILES IN LENGTH. (NO FRACTIONAL OR DECIMAL NUMBERS)</p>	<p>NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS:</p> <p>1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE 2) SUBDIVISION ROADS 3) DEAD END ROADS</p> <p>WHEN PAVING/CONSTRUCTION ACTIVITIES PROCEED ACROSS AN UNSIGNED -Y- LINE, PORTABLE ADVANCE WARNING SIGNS SHALL BE USED ALONG THE -Y- LINE AS SHOWN BELOW. REMOVE UPON COMPLETION OF WORK.</p> <div style="display: flex; justify-content: space-around;"> <div>  W20-1 48" X 48" PLACED 500' IN ADVANCE OF FLAGGER. </div> <div>  W20-7 A 48" X 48" PLACED 250' IN ADVANCE OF FLAGGER. </div> </div>
	<p>③  - PLACE INITIALLY AT THE CONSTRUCTION LIMITS AND SPACE 1 MILE APART THEREAFTER. - AT TEE INTERSECTIONS INSTALL INITIALLY 1/2 MILE FROM INTERSECTION AND SPACE 1 MILE APART THEREAFTER.</p>	
	<p>④  - THESE ARE FOR -Y- LINES THAT ARE "THROUGH" ROADWAYS. - DEAD END AND SUBDIVISION ROADS ARE NOT "THROUGH" ROADWAYS. - INSTALL 500' +/- FROM EACH -Y- LINE APPROACH AS SHOWN ABOVE. - FOR MULTIPLE -Y- LINES THAT ARE SEPARATED BY 0.25 MILES OR LESS, TREAT AS A SINGLE UNIT AND INSTALL WITHIN 500' OF EACH APPROACH. - A MAXIMUM OF 2 SIGN SETS PER MILE. DO NOT INSTALL WHEN -Y- LINES ARE WITHIN 0.5 MILES FROM "END ROAD WORK" SIGN. - FOR TEE INTERSECTIONS, INSTALL WITHIN 500' +/- OF THE INTERSECTION ALONG -L- LINE.</p>	
	<p>⑤  PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS OR AS SHOWN WHEN WORK ENDS AT A 3-WAY TEE INTERSECTION.</p>	
	<p>THE ABOVE SIGNS ARE ALL THAT ARE REQUIRED FOR A CONTRACTOR TO BEGIN A RESURFACING CONTRACT. ANY ADDITIONAL SIGNS REQUESTED BY NCDOT DIVISIONS SHALL BE INSTALLED WITHIN 7 BUSINESS DAYS OF THE START OF CONTRACT WORK.</p>	

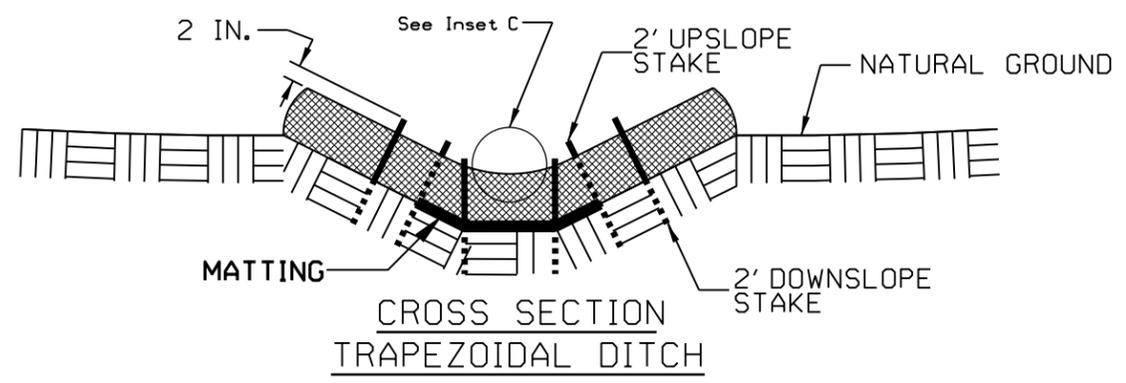
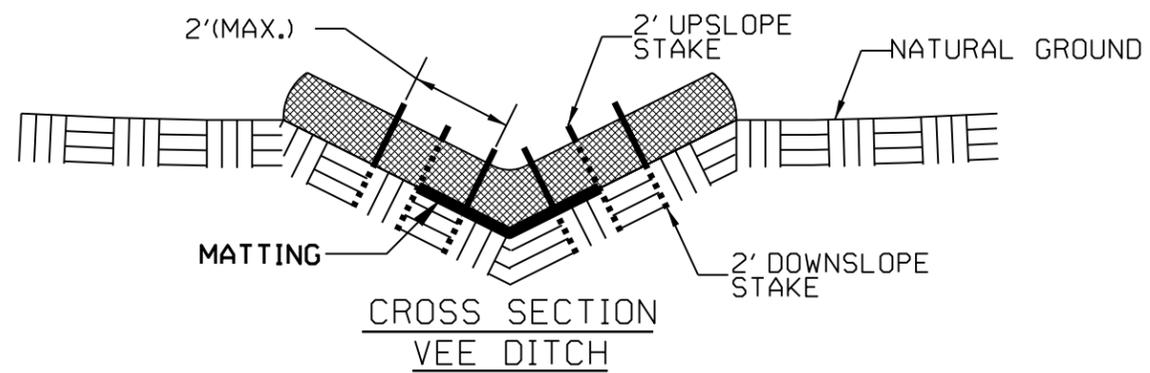
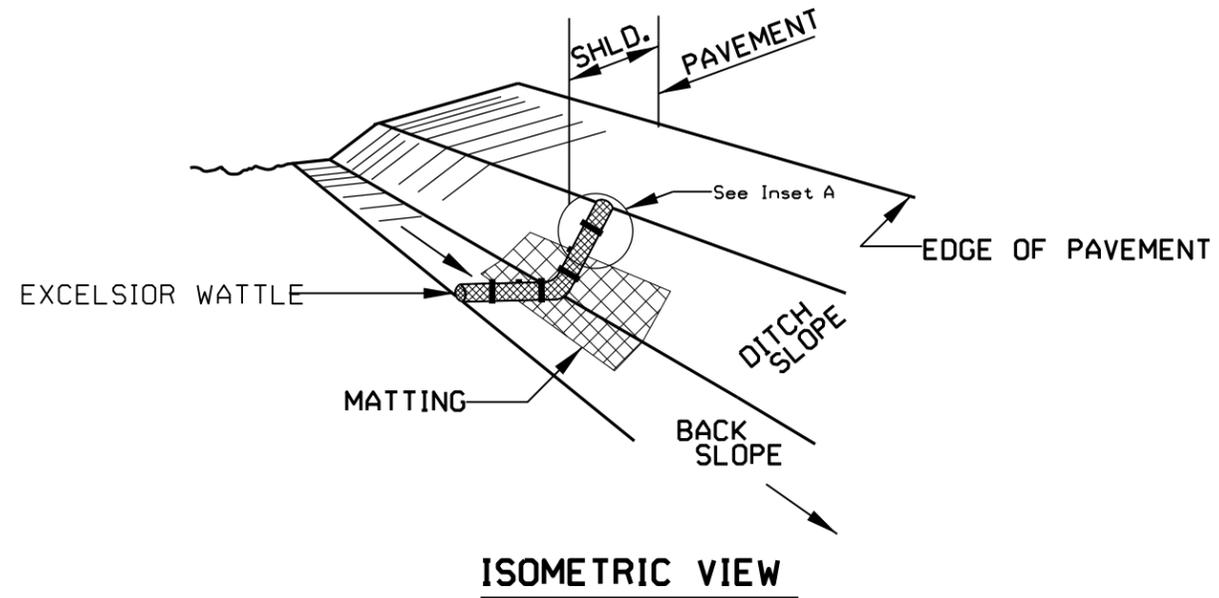
MAPS LESS THAN 2 MILES

FOR RESURFACING MAPS WITH CONSTRUCTION LIMITS LESS THAN 2 MILES IN LENGTH, NO STATIONARY SIGNS ARE REQUIRED. USE PORTABLE "ROAD UNDER CONSTRUCTION" OR "ROAD WORK AHEAD" SIGNS IN LIEU OF STATIONARY ADVANCE WARNING SIGNS.

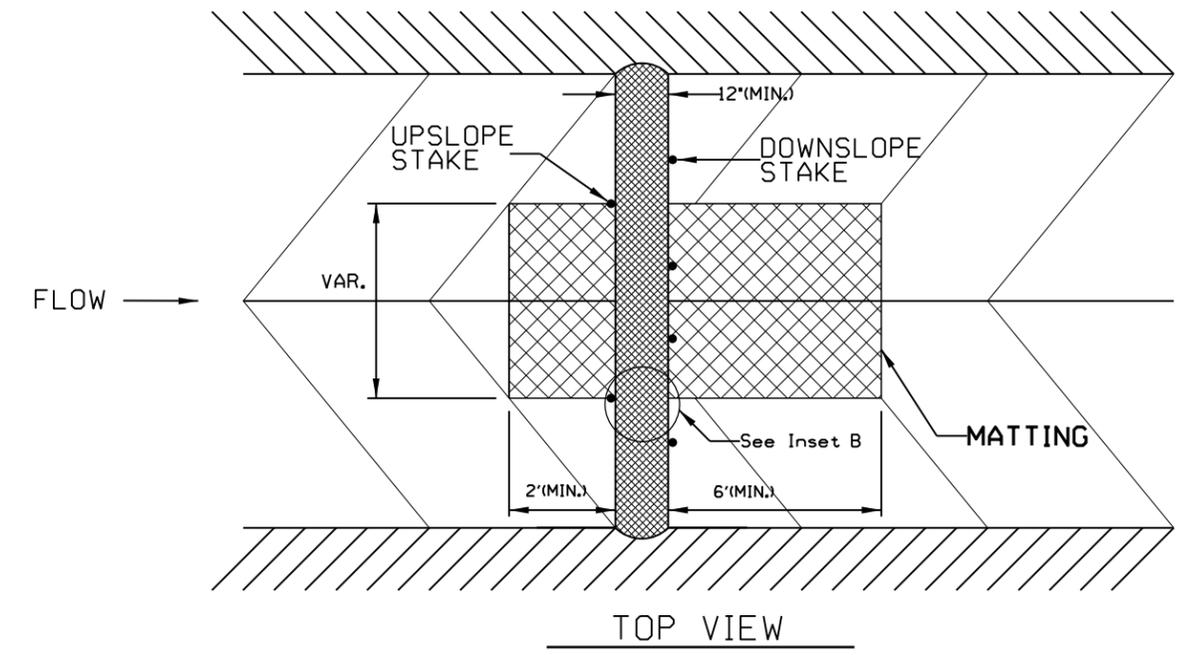
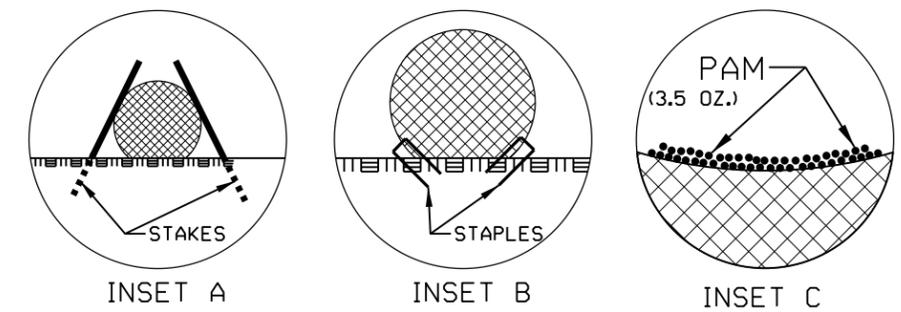


ADVANCE WARNING SIGNS FOR RURAL AND SUBURBAN 2-LANE ROADWAY RESURFACING

WATTLE WITH POLYACRYLAMIDE DETAIL



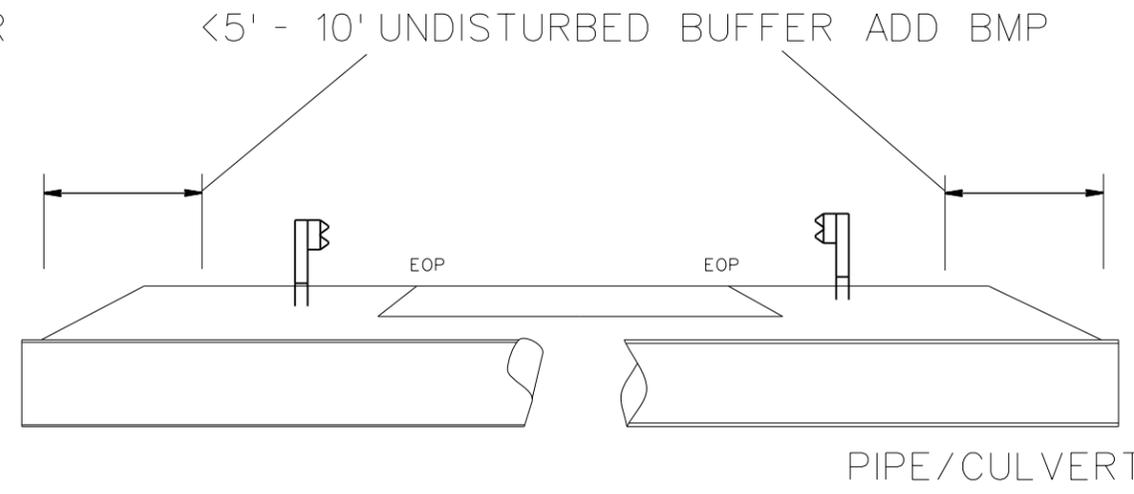
- NOTES:**
- USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.
 - USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. CROSS SECTION.
 - INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.
 - PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
 - INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
 - INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.
 - PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.
 - INITIALLY APPLY 3.5 OUNCES OF ANIONIC OR NEUTRALLY CHARGED POLYACRYLAMIDE (PAM) OVER WATTLE WHERE WATER WILL FLOW AND AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



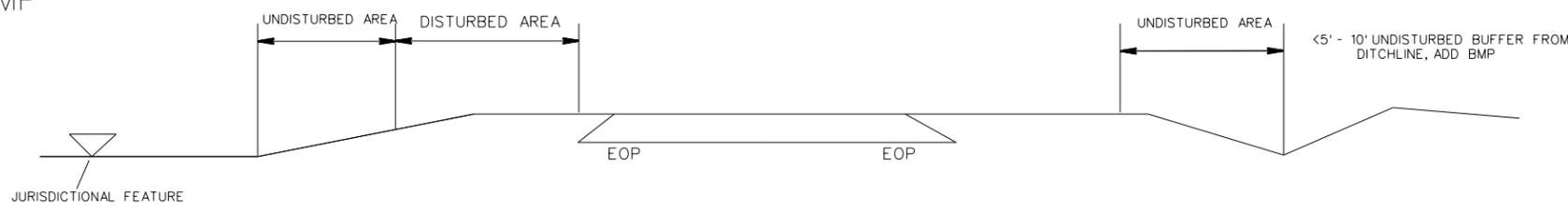
NOTES: LESS THAN 5' - 10' UNDISTURBED BUFFER FROM ROW, DITCHLINE, WATER FEATURE, OR DRAINAGE INLET, ADD BMP.

BMP OPTIONS: WATTLE OR SILT FENCE

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	49860.3.5	EC2	
F.A. PROJECT NO. 1003186			



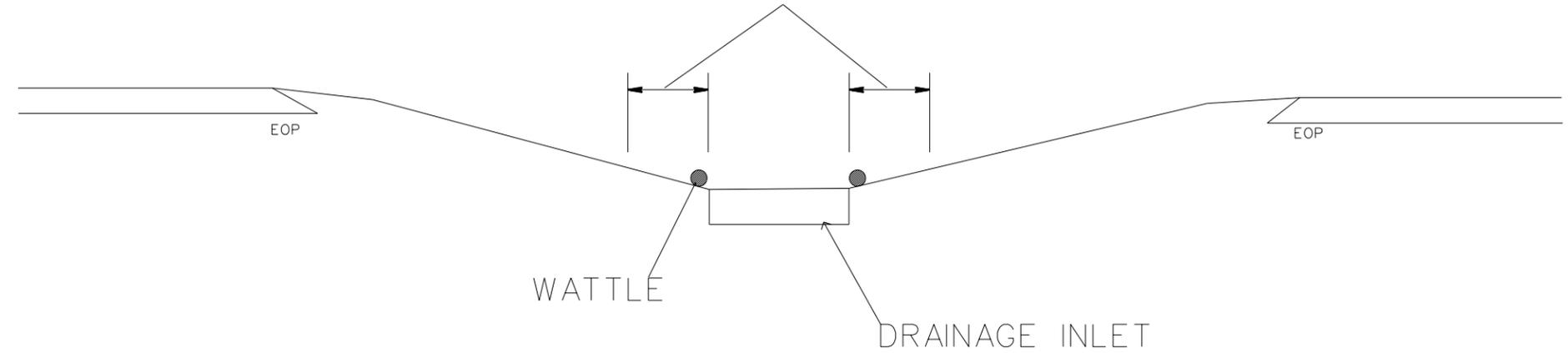
<5' - 10' UNDISTURBED BUFFER FROM JURISDICTIONAL FEATURE ADD BMP



USE BMP'S IF SHOULDERS AND/OR FRONTSLOPES AND/OR DITCHLINE AND/OR BACKSLOPES ARE DISTURBED



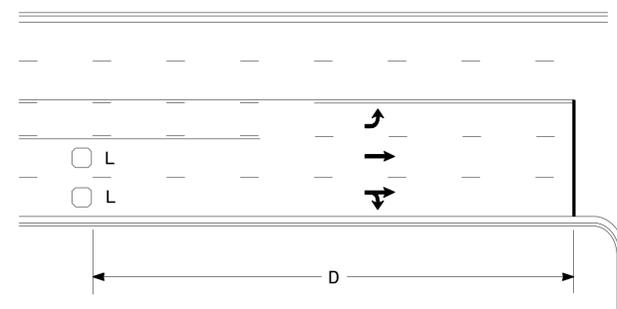
<5' - 10' UNDISTURBED BUFFER FROM INLET, ADD WATTLE



EROSION CONTROL DETAIL

SCALE	-NA-		REVISIONS
DATE	11/20		
DWG. BY	AMO		
DESIGN BY	AMO		
APPROVED			

High Speed Detection (≥40 mph)

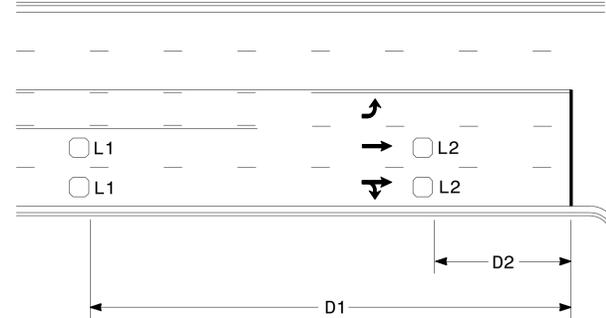


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

L = 6ft X 6ft
Wired in series for TS1
Controllers
Wired separately for TS2,
170, and 2070L Controllers

Volume Density Operation

OR

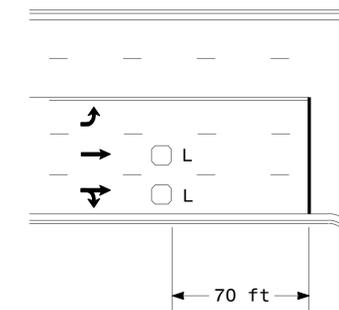


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

L1 = 6ft X 6ft
Wired in series
L2 = 6ft X 6ft
Wired in series

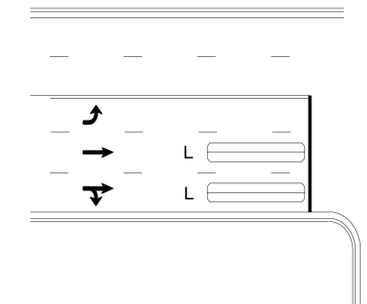
"Stretch" Operation

Low Speed Detection (≤35 mph)



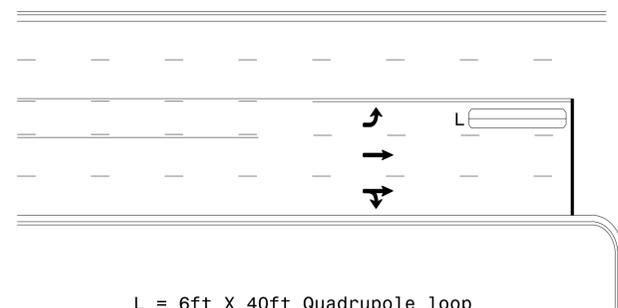
L = 6ft X 6ft
Wired in series

OR



L = 6ft X 40ft
Quadrupole loop, wired separately

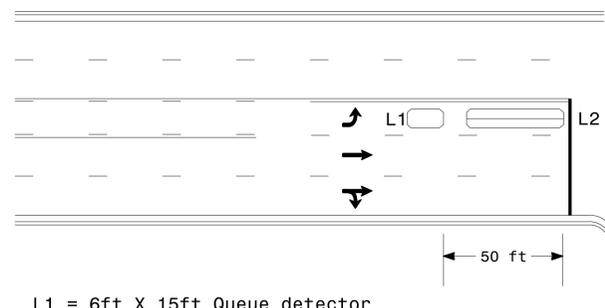
Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

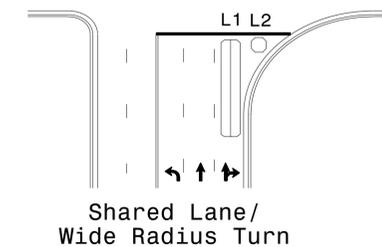
OR



L1 = 6ft X 15ft Queue detector
L2 = 6ft X 40ft Quadrupole loop

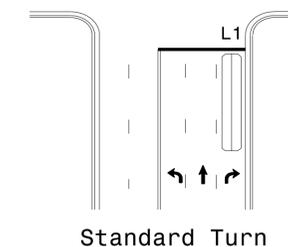
Queue Loop Detection

Right Turn Lane Detection

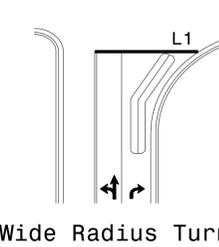


Shared Lane/
Wide Radius Turn

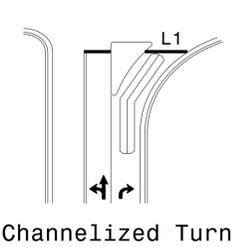
L1 = 6ft X 40ft Quadrupole loop
L2 = 6ft X 6ft [Minimum] Presence loop
Wired separately



Standard Turn

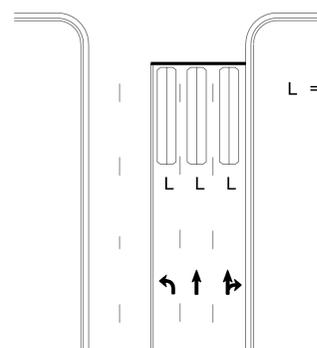


Wide Radius Turn



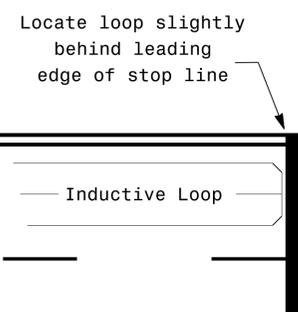
Channelized Turn

Side Street Detection



L = 6ft X 40ft
Quadrupole loop
Wired to separate
detectors/channels

Presence Loop Placement at Stop Lines



Locate loop slightly
behind leading
edge of stop line

Note:
Loop may be located in advance
of stop line under any of the
following conditions:
1) stop line is greater than 15'
from edge of intersecting
roadway
2) loop detects a permissive or
protected/permissive left turn
3) for an exclusive right turn
lane

Recommended Number of Turns

Single 6' X 6' loop
(when wired separately):

Length of Lead-in ft	Number of Turns
< 250	3
250-375	4
375-525	5
> 525	6

Quadrupole loops: Use 2-4-2 turns

6' X 15' Loops:
Lead-in < 150', use 2 turns
Lead-in > 150', use 3 turns

750 N. Greenfield Pkwy, Garner, NC 27529

Typical Signal Loop Locations

PLAN DATE: January 2015	REVIEWED BY: JPG
PREPARED BY: PLA	REVIEWED BY:
REVISIONS	INIT. DATE

SEAL
NORTH CAROLINA
PROFESSIONAL ENGINEER
PAMELA L. ALEXANDER
23489

DocuSigned by:
P. Alexander
1/30/2015 10:44:44 AM
DATE

SIG. INVENTORY NO.

PROJECT NO.	SHEET NO.	TOTAL NO.
49860.3.5	12	13

SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH	WIDTH	0106000000-E	1220000000-E	1245000000-E	1297000000-E	1330000000-E	1523000000-E	1524000000-E	1575000000-E	1704000000-E	2612000000-E	2613000000-N	2830000000-N	2845000000-N	4600000000-N	5255000000-N	6000000000-E	6009000000-E	6012000000-E	6071010000-E	6071020000-E	7444000000-E	
												BORROW	INCIDENTAL STONE BASE	SHOULDER RECONSTRUCTI ON	1 1/2" MILLING	INCIDENTAL MILLING	SURFACE COURSE, S9.5C	LEVELING COURSE, S9.5C	ASPHALT BINDER FOR PLANT MIX	PATCHING EXISTING PAVEMENT	6" CONCRETE DRIVEWAYS	REMOVE AND REPLACE CURB RAMPS	ADJ. OF MANHOLES	ADJ. OF METER OR VALVE BOX	GENERIC TRAFFIC CONTROL ITEM; TEMPORARY CURB RAMPS	PORTABLE LIGHTING	TEMPORARY SILT FENCE	STONE FOR EROSION CONTROL, CLASS B	SEDIMENT CONTROL STONE	WATTLE	POLYACRYLAMIDE (PAM)	INDUCTIVE LOOP SAWCUT	
												MI	FT	CY	TONS	SMI	SY	SY	TONS	TONS	TONS	TONS	EA	EA	EA	EA	LS	LF	TN	TN	LF	LB	LF
49860.3.5	Union	1	SR 1009 NORTH CHARLOTTE AVENUE	FROM WALNUT STREET TO NC 200 MP 0.53 TO 1.65		1,2,3,4	2	ZWU	NO	NO	1.12	25-49	130	75	1.70	8,433		2,115	495	184	560	400	4	3	9	4	1	160	21	10	160		950
TOTAL FOR MAP NO. 1												1.12	130	75	1.70	8,433		2,115	495	184	560	400	4	3	9	4	1	160	21	10	160		950
49860.3.5	Union	2	SR 1315 NEWTOWN ROAD	FROM SR 1321 CUTHBERTSON ROAD TO SR 1319 ENNIS ROAD MP 8.7 TO 10.7			2	ZWU	NO	NO	2.1	20-35	300	140	4.20	1,459	420	2,675	1,166	276	945	50			1			315	42	21	315	1	
TOTAL FOR MAP NO. 2												2.1	300	140	4.20	1,459	420	2,675	1,166	276	945	50			1		315	42	21	315	1		
TOTAL FOR PROJ NO. 49860.3.5												3.22	430	215	5.90	9,892	420	4,790	1,661	460	1,505	450	4	3	10	4	1	475	63	31	475	1	950
GRAND TOTAL												3.22	430	215	5.90	9,892	420	4,790	1,661	460	1,505	450	4	3	10	4	1	475	63	31	475	1	950

